Amendments to the Claims

Kindly amend claims 1, 4 & 14, as set forth below. All claims are reproduced below, with changes in the amended claims shown by underlining (for added matter) and strikethrough/double brackets (for deleted matter).

1. (Currently Amended) A method for detecting the quick restart of liveness daemons in a distributed, multimode data processing system in which nodes communicate liveness indicia in the form of heartbeat signals via adapters coupled to each node, said method comprising:

subsequent to a failure and quick restart at one node of a membership group, receiving a signal from at least one other node of the membership group at the one node experiencing the failure and quick restart, wherein the failure and quick restart deletes locally stored membership group information at the one node, and wherein the quick restart at the one node occurs prior to detection of the failure and expulsion of the one node from the membership group due to the failure;

sending, from the one node to the at least one other node, a first message which includes at least indicia of occurrence of the quick restart at the one node, the sending being responsive to receipt of the signal at the one node; and

determining at the at least one other node, from said indicia of occurrence of said quick restart and from locally stored membership group information indicating prior membership of the one node in the membership group, the existence of a quick restart at said one node, and responding thereto by sending a second message from the at least one other node to another node of the membership group which indicates that said one node is to be expelled from the membership group.

2. (Previously Presented) The method of claim 1 in which said second message is sent by the node that is next in line for receipt of heartbeat signals, with respect to the node that sent the first message.

3. (Previously Presented) The method of claim 1, wherein the membership group is an adapter membership group, and in which said quick restart indicia are selected from the group consisting of: (1) an indication that the one node and the at least one other node are not both in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to said at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

4. (Currently Amended) A multimode data processing system comprising:

a plurality of data processing nodes connected in a network capable of transmitting messages between nodes;

storage means within said nodes containing program code for, subsequent to a failure and quick restart at one node of a membership group, receiving a signal from at least one other node of the membership group to the one node experiencing the failure and quick restart, wherein the failure and quick restart deletes locally stored membership group information at the one node, and wherein the quick restart at the one node occurs prior to detection of the failure and expulsion of the one node from the membership group due to the failure, sending from the one node to the at least one other node a first message which includes at least indicia of occurrence of the quick restart at the one node, the sending being responsive to receipt of the signal at the one node, and for determining at the at least one other node, from said indicia of occurrence of said quick restart and from membership group information in storage the at least one other node indicating prior membership of the one node in the membership group, and the existence of said quick restart at said one node, and responding thereto by sending a second message from the at least one other node to another node of the membership group which indicates that said one node is to be expelled from the membership group.

5. (Previously Canceled).

6. (Previously Presented) The method of claim 3, wherein the quick restart indicia includes each of: (1) an indication that the one node and the at least one other node are not in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to the at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

7. (Previously Presented) The method of claim 1, wherein the first message comprises a PROCLAIM message.

8. (Previously Presented) The method of claim 1, wherein the signal comprises a "HEARTBEAT" message, the first message comprises a "NOT YOUR NEIGHBOR" message, and the second message comprises a "DEATH" message, wherein the at least one other node forwards the "DEATH" message to a group leader node of the membership group.

9. (Previously Presented) The multinode data processing system of claim 4, in which said second message is sent by the at least one other node that is the upstream neighbor, in terms of heartbeat passing signals, of the one node that sent the first message.

10. (Previously Presented) The multinode data processing system of claim 4, wherein the membership group is an adapter membership group, and in which said quick restart indicia are selected from the group consisting of: (1) an indication that the one node and the at least one other node are not both in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to said at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

11. (Previously Presented) The multinode data processing system of claim 10, wherein the quick restart indicia includes each of: (1) an indication that the one node and the at least one other node are not in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to the at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

12. (Previously Presented) The multinode data processing system of claim 4, wherein the first message comprises a PROCLAIM message.

13. (Previously Presented) The multinode data processing system of claim 4, wherein the signal comprises a "HEARTBEAT" message, the first message comprises a "NOT YOUR NEIGHBOR" message, and the second message comprises a "DEATH" message, wherein the at least one other node forwards the "DEATH" message to at group leader node of the membership group.

14. (Currently Amended) At least one program storage device readable by at least one computer, tangibly embodying at least one program of instructions executable by the at least one computer to perform a method of detecting quick restart of liveness daemons in a distributed, multinode data processing system in which nodes communicate liveness indicia in the form of heartbeat signals via adapters coupled to each other, said method comprising:

subsequent to a failure and quick restart at one node of a membership group, receiving a signal from at least one other node of the membership group at the one node experiencing the failure and quick restart, wherein the failure and quick restart deletes locally stored membership group information at the one node, and wherein the quick restart at the one node occurs prior to detection of the failure and expulsion of the one node from the membership group due to the failure;

sending, from the one node to the at least one other node, a first message which includes at least indicia of occurrence of the quick restart at the one node, the sending being responsive to receipt of the signal at the one node; and

determining at the at least one other node, from said indicia of occurrence of said quick restart and from locally stored membership group information indicating prior membership of the one node in the membership group, the existence of a quick restart at said one node, and responding thereto by sending a second message from the at least one other node to another node of the membership group which indicates that said one node is to be expelled from the membership group.

15. (Previously Presented) The at least one program storage device of claim 14, in which said second message is sent by the at least one other node that is the upstream neighbor, in terms of heartbeat passing signals, of the one node that sent the first message.

16. (Previously Presented) The at least one program storage device of claim 14, wherein the membership group is an adapter membership group, and in which said quick restart indicia are selected from the group consisting of: (1) an indication that the one node and the at least one other node are not both in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to said at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

17. (Previously Prsented) The at least one program storage device of claim 16, wherein the quick restart indicia includes each of: (1) an indication that the one node and the at least one other node are not in the adapter membership group; (2) an indication that the one node's address is part of the adapter membership group according to the at least one other node; and (3) an indication of difference in instantiation number for the one node's adapter ID listed in the adapter membership group.

18. (Previously Presented) The at least one program storage device of claim 14, wherein the first message comprises a PROCLAIM message.

19. (Previously Presented) The at least one program storage device of claim 13, wherein the signal comprises a "HEARTBEAT" message, the first message comprises a "NOT YOUR NEIGHBOR" message, and the second message comprises a "DEATH" message, wherein the at least one other node forwards the "DEATH" message to a group leader node of the membership group.

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